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EXAMINER

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Application Number: 09/932,553
Filing Date: August 17, 2001
Appellant(s): HEBERT, JAMES E.

—————————————
Kent A. Lembke
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed January 25, 2006 appealing from the Office action

mailed August 24, 2005.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The statement identifying related appeals, interferences, or judicial proceedings which

will directly affect or be directly affected by or have a bearing on the Board's decision in the

pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in

the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

| 6,392,990 B1 | TOSEY ET AL. | 5-2002 |

| 6,243,838 B1 | LIU ET AL. | 6-2001 |

AAPA (Appellant's Admitted Prior Art, the background of the invention in the specification).

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

A.   Claims 1-6, 8-13, and 15 are rejected under 35 U.S.C. 103(a) as being obvious over Appellant's Admitted Prior Art ("AAPA", the background of the invention in the specification) in view of Tosey et al. ("Tosey") (USPN 6,392,990 B1).

Regarding claims 1 and 8, AAPA teaches a communication adapter system (communication adapter system, e.g. a private network, page 1, ll 28-30) for connecting a client (a client, page 1, ll 28-30) to a network (the communication network, page 1, ll 28-30), the system comprising:

a server (a server) having a memory (since a software application is running of a server, a memory must be included to store the software application) electrically connected to the client (page 1, ll 28-page 2, ll 4, and page 3, ll 26-33);

a primary I/O board (a primary I/O board) electrically connected to the server and

having a primary network interface card, the primary NIC having an inherent primary I/O port

for connecting to the network, the primary NIC selectively enabling active transfer of data from

the client to the network through the primary I/O port (page 1, ll 28-page 2, ll 4, and page 3, ll

26-33);

      a secondary I/O board (a passive I/O board) electrically connected to the server

and having a secondary NIC (a passive NIC), the secondary NIC having an inherent secondary

I/O port for connecting to the network, the secondary NIC selectively enabling active transfer of

data from the client to the network though the secondary I/O port (page 1, ll 28-page 2 and page

3, ll 33-page 4, ll 2);

      a primary switch (a primary switch) electrically connected to the primary I/O port

and the network (page 1, ll 28-page 2, ll 4, and page 3, ll 26-33);

      a secondary switch (a passive switch) electrically connected to the secondary I/O

port and the network (page 1, ll 28-pge 2, ll 4, and page 3, ll 26-page 4, ll 2); and

      program signals (a software application) stored in the memory of the server (page

2, ll 1-2).

      AAPA further teaches that program signals defining an executable program for:

      generating a connectivity signal (a UNIX system command) to the primary NIC to

test connectivity at least from the primary I/O board to the primary NIC (page 4, ll 4-9);

      monitoring the primary I/O port to detect a response signal (since the response to

the query must be received through the I/O port, page 4, ll 4-9, therefore, monitoring of the

primary I/O must be included);

      configuring the primary NIC to disable active transfer of data if connectivity is

not detected (page 4, ll 4-9);

configuring the secondary NIC to enable the active transfer of data if connectivity

is not detected (failover operation is performed, page 4, ll 4-9).

However, AAPA fails to teach (i) generating the connectivity signal to the

primary switch, (ii) monitoring the primary I/O port to detect a response signal within a

predetermined time period after the generation of the connectivity; and (iii) configuring the

primary NIC to disable and the secondary NIC to enable the active transfer of data if the

response signal is not detected within the time period as recited in the claim.

In a similar network architecture, as shown in Figs. 2 and 4A, Tosey teaches

generating a connectivity signal (a ping) to the primary switch (hub A 22) to test connectivity

from the network computing device 21 to the primary switch (since the computing device 21

transmits an ICMP or ping link test to a peer network computing device connected to hub 22 in

Fig. 2, col. 6, ll 46-65 and col. 7, ll 35-43, therefore, the link test must be sent to hub 22 in order

to be forwarded to the peer device, and because Tosery further teaches that "The present

invention also detects the failure of other network connecting components…such as the hub,"

col. 4, ll 36-41, and "This invention also allows the network computing device 21 to recover

when other connecting network components fails, such as ..hub A22," col. 4, ll 64-col. 5, ll 3,

therefore, the link test must also be used to test connectivity from the network computing device

21 to the hub 22), monitoring the primary input/output port of the primary NIC 25 in Fig. 2 to

detect a response signal from the primary switch (hub 22 in Fig. 2) within a predetermined time

period (T_2 seconds) after the generation of the connectivity signal (the response generated by the

peer device is determined by device 21, col. 7, ll 44-55, and since the peer device is connected to

device 21 via hub 22, therefore, the response transmitted from hub 22 to device 21 must be

monitored), configuring the primary NIC 25 to disable active transfer of data and configuring the

secondary NIC 26 in Fig. 2 to enable the active transfer of data if the response signal is not

detected within the time period (col. 8, ll 1-4 and 7-21).

        Given the teaching of Tosey, it would have been obvious to one skilled in the art

to modify the teaching of AAPA to include the teaching of Tosey such that (i) generating the

connectivity signal to the primary switch, (ii) monitoring the primary I/O port to detect a

response signal a predetermined time period after the generation of the connectivity, and (iii)

configuring the primary NIC to disable and the secondary NIC to enable the active transfer of

data if the response signal is not detected within the time period would be included as recited in

the claim. The suggestion/motivation to do so would have been to enable the server to recover

when other connecting network component fails as taught by Tosey (col. 4, ll 61-67).

        Regarding claims 2 and 9, AAPA does not explicitly teach that the network is an

FDDI network. However, the admitted prior art teaches that the most common communication

adapter system used today is an interface system to an FDDI network (page 1, ll 28-33 and page

3, ll 1-9). Therefore, it would have been obvious to one skilled in the art to modify the teaching

of the admitted prior art to include that the network is an FDDI network. The

suggestion/motivation to do so would have been to take advantage of the intrinsic redundancies

of the FDDI network such that the data transfer with a client would be maintained even if a

network device should fail (the admitted prior art, page 3, ll 6-9), and such a change in a field of

use involves only routine skill in the art.

Regarding claims 3 and 10, although AAPA teaches generating a connectivity signal to the primary NIC to test connectivity from the primary I/O board to the primary NIC (page 4, ll 4-9), AAPA fails to teach generating a connectivity signal to a remote device on the network to test connectivity from the primary I/O board through the primary switch and to the remote device.

However, Tosey teaches generating a connectivity signal (a ping) to a remote device (a peer device connected to hub A, i.e. another network computing device, Fig. 2) on the network to test connectivity from the network computing device A, Fig. 1 through the primary switch (hub A, Fig. 2) and to the remote device (a peer device) (col. 4, ll 36-44, col. 6, ll 46-61, col. 7, ll 44-47).

Given the teaching of Tosey, it would have been obvious to one skilled in the art to modify the teaching of AAPA to include generating a connectivity signal to a remote device on the network to test connectivity from the primary I/O board through the primary switch and to the remote device as recited in the claim. The suggestion/motivation to do so would have been to enable the server to recover when other connecting network component fails as taught by Tosey (col. 4, ll 61-67).

Regarding claims 4 and 11, AAPA fails to teach that the connectivity is a ping signal. Tosey teaches that the connectivity is a ping signal (col. 6, ll 46-49 and 56-61).

Therefore, it would have been obvious to one skilled in the art to modify the teaching of AAPA to include that the connectivity is a ping signal. The suggestion/motivation to do so

would have been to enable the device generating a ping signal, which is the most desirable

protocol, to determine whether a destination is reachable (col. 6, ll 56-65).

        Regarding claims 5-6 and 12-13, AAPA fails to teach that the program comprises

transferring network information including a logical IP address from the primary NIC to the

secondary NIC.

        However, Tosey teaches that the program (the administrative software, col. 4, ll

52-55) comprises transferring network information including a logical IP address (a mobile IP

address) from the primary NIC (NIC 25, Figs. 5A and 5B) to the secondary NIC (NIC 26, Figs.

5A and 5B) (col. 8, ll 7-39).

        Given the teaching of Tosey, it would have been obvious to one skilled in the art

to modify the teaching of AAPA to include that the program comprises transferring network

information including a logical IP address from the primary NIC to the secondary NIC. The

suggestion/motivation to do so would have been to enable the recovery process and allow the

programs at the application layer to continually send information through the secondary NIC

(col. 8, ll 10-21 and 37-39).

        Claim 15 is a communication adapter system claim corresponding to system claim

1, and is therefore rejected under the same reason set forth in the rejection of claim 1 with an

addition of configuring the secondary NIC to enable the active transfer of data if the response

signal is not detected within the time period by transferring network information comprising

broadcasts from the primary NIC to the secondary NIC. AAPA fails to teach configuring the

secondary NIC to transfer network information comprising broadcasts from the primary NIC to

the secondary NIC as recited in the claim. However, Tosey teaches configuring a secondary NIC

(the secondary interface) to enable the active transfer of data if the response signal is not detected

within the time period (T_2 seconds) (col.7, ll 44-55 and col. 8, ll 1-4 and 7-21) by transferring

network information comprising broadcasts from the primary NIC to the secondary NIC (after

the first interface fails, the second interface broadcasts the new IP address, col. 8, ll 36-38 and

44-47, therefore, the second interface transfers broadcasts from the primary interface to the

secondary interface).

       Given the teaching of Tosey, it would have been obvious to one skilled in the art

to modify the teaching of AAPA to include configuring the secondary NIC to enable the active

transfer of data if the response signal is not detected within the time period by transferring

network information comprising broadcasts from the primary NIC to the secondary NIC. The

suggestion/motivation to do so would have been to enable the recovery process and allow the

programs at the application layer to continually send information through the secondary NIC

(col. 8, ll 10-21 and 37-39).

     B.   Claims 7 and 14 are rejected under 35 U.S.C. 103(a) as being obvious over

Appellant's Admitted Prior Art ("AAPA", the background of the invention in the specification)

in view of Tosey et al. ("Tosey") (USPN 6,392,990 B1), and further in view of Liu et al. ("Liu")

(USPN 6,243,838 B1).

       Regarding claims 7 and 14, the combined teaching of AAPA and Tosey fails to

teach that the program comprises notifying a systems administrator of a failure.

However, Liu teaches notifying a systems administrator of a failure (Abstract, col. 2, ll 20-34 and 50-58).

Therefore, it would have been obvious to one skilled in the art to modify the combined teaching of AAPA and Tosey to include that the program comprises notifying a systems administrator of a failure. The suggestion/motivation to do so would have been to allow the remedial actions to be promptly taken as taught by Liu (col. 2, ll 10-14).

(10) Response to Argument

A.   *Appellant's arguments and Examiner's responses regarding independent claims 1 and 8 are as follows:*

i).   Appellant's argument: Tosey teaching of passing a ping through a hub to a peer device and then passing a response from the peer device through the hub to a peer device does not read on claim 1 which calls for "generating a connectivity signal to the primary switch" and to "detect a response from the primary switch."

Examiner's response: As shown in Fig. 4A, Tosey teaches that "In block 112, the network computing device 21 then transmits a link test to one or more of the peer device IP addresses recorded in block 110," (col. 7, ll 35-43). The peer device is the router 24 being coupled to the network computing device 21 via the hub 22 which examiner reads as the claimed primary switch. Therefore, based on Fig. 2 (col. 6, ll 6-7), (i) a link test or a ping signal must be sent to a hub 22 in order to be fowarded to another peer network device, i.e. router 24, to test the connectivity on paths 27 and 29. So the path 27 connecting the computing device 21 and the hub 22 (primary switch) is also tested. Tosey further teaches that "Next, in block 114, the computing

device 21 runs a test to determine if at least one peer network computing device [router 24] has

responded within T2 seconds, " (col. 7, ll 44-56) which means that the network computing

device 21 monitors a response (generated by the peer network device, i.e. router 24). (ii) The

response is transmitted through the hub A22 in order to be forwarded to the network device 21.

As can be seen, the link test and the response in corresponding direction must be received at the

hub 22 (primary switch) before being forwarded to the network device 21 or the peer network

device 24. Therefore, the teaching of Tosey in (i) and (ii) fully meets the claim limitation.

It is noted that the features upon which appellant relies (i.e., generating a

connectivity signal "destined for" or "addressed to" the primary switch, detecting a response

signal "generated by" the primary switch, and wherein the connectivity signal includes an

electrical NIC connectivity test signal) are not recited in the rejected claim(s). Although the

claims are interpreted in light of the specification, limitations from the specification are not read

into the claims. See In re Van Geuns, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

However, even with those features above (i.e. the connectivity signal is addressed

to/destined for the primary switch) were included in claims 1 and 8, claims still read on the

admitted prior art in view of Tosey as follows:

In this interpretation the claimed primary switch now reads on router A (instead

of hub A as previously discussed).

As shown in Figs. 2, 3, and 4A, Tosey teaches generating a connectivity signal (a

ping) to the primary switch (router A in Fig. 3, col. 4, ll 38-44 and col. 5, ll 66-col. 6, ll 5) to test

connectivity from the network computing device 21 to the primary switch (the computing device

31 transmits a ping link test to a peer network computing device, i.e. router A in Fig. 3, col. 4, ll

45-46, col. 6, ll 6-7, 46-65 and col. 7, ll 35-43), monitoring the primary input/output of the

primary NIC 37 in Fig. 3 to detect a response signal from the primary switch (router A in Fig. 3)

within a predetermined time period (T_2 seconds) after the generation of the connectivity signal

(the response from the peer device, i.e. router A, is determined by device 31, col. 7, ll 44-55,

therefore, the response from router A must be monitored), configuring the primary NIC 37 to

disable active transfer of data and configuring the secondary NIC 38 in Fig. 3 to enable the active

transfer of data if the response signal is not detected within the time period (col. 8, ll 1-4 and 7-

21).

   In this configuration, it is clear that the ping signal (a connectivity signal) is

destined for router A (the primary switch) and the response to the ping signal (a response from

the primary switch) is generated by router A (the primary switch) and transmitted back to the

network computing device A.

  ii) Appellant's argument: A lack of response to the ping test of Tosey (a ping that is

sent to and responded by the peer device, and the hub merely passes the ping and the response)

may indicate a failure somewhere within the transmission line/connection path between the

sending device and the peer device, not a failure between the sending device and the hub because

the ping is not sent to and responded by the hub. Thus, Tosey fails to teach a connectivity signal

that is used to test connectivity from the primary I/O board to the primary switch.

   Examiner's response: As admitted by the appellant that a lack of response to the

ping test of Tosey may indicate a failure somewhere within the transmission line/connection

path, which includes the hub, between the sending device and the peer device, therefore, the

claim limitation must be met when a failure actually occurs within a path between the sending

device and hub 22 (e.g. link 27 in Fig. 2). Tosey further teaches that "The present invention also

detects the failure of other network connecting components…such as the hub," col. 4, ll 36-41

and "This invention also allows the network computing device 21 to recover when other

connecting network components fails, such as … hub A22," col. 4, ll 64-col. 5, ll 3. Therefore,

the link test must be used to test connectivity to the hub. On the other hand, if the response to

the ping signal (generated by the peer device) is received within a predetermined time period, it

can be concluded that at least the connectivity from the sending device to the hub is tested to be

operating. Therefore, regardless of the result of the ping test/response to the connectivity signal,

the function of the ping signal of Tosey still reads on the claim limitation.

      It is noted that the feature upon which appellant relies (i.e., a connectivity signal

to detect a failure between the primary I/O board and the primary switch is not recited in the

rejected claim(s). Although the claims are interpreted in light of the specification, limitations

from the specification are not read into the claims. See In re Van Geuns, 988 F.2d 1181, 26

USPQ2d 1057 (Fed. Cir. 1993).

      However, even with those features above (i.e., a connectivity signal to detect a

failure between the primary I/O board and the primary switch) were included in claims 1 and 8,

claims still read on the admitted prior art in view of Tosey as follows:

      In this interpretation the claimed primary switch now reads on router A (instead

of hub A as previously discussed).

      As shown in Figs. 2, 3, and 4A, Tosey teaches generating a connectivity signal (a

ping) to the primary switch (router A in Fig. 3, col. 4, ll 38-44 and col. 5, ll 66-col. 6, ll 5) to test

connectivity from the network computing device 21 to the primary switch (the computing device

31 transmits a ping link test to a peer network computing device, i.e. router A in Fig. 3, col. 4, ll

45-46, col. 6, ll 6-7, 46-65 and col. 7, ll 35-43), monitoring the primary input/output of the

primary NIC 37 in Fig. 3 to detect a response signal from the primary switch (router A in Fig. 3)

within a predetermined time period (T_2 seconds) after the generation of the connectivity signal

(the response from the peer device, i.e. router A, is determined by device 31, col. 7, ll 44-55,

therefore, the response from router A must be monitored), configuring the primary NIC 37 to

disable active transfer of data and configuring the secondary NIC 38 in Fig. 3 to enable the active

transfer of data if the response signal is not detected within the time period (col. 8, ll 1-4 and 7-

21).

        In this configuration, clearly, the ping signal (a connectivity signal) is used to test

the connectivity between the sending device, i.e. the network computing device 31, and router A

(the primary switch).

    iii)   Appellant's argument: Claim 1 is not made obvious in light of Tosey teaching

and appellant's background which shows the use of a redundant I/O board and NIC but only

discusses testing from the I/O board to the NIC.

        Examiner's response: In response to applicant's argument that there is no

suggestion to combine the references, the examiner recognizes that obviousness can only be

established by combining or modifying the teachings of the prior art (appellant's background that

discusses testing the connectivity up to the NIC and Tosey teaching on testing the connectivity

up to the primary switch) to produce the claimed invention where there is some teaching,

suggestion, or motivation to do so found either in the references themselves or in the knowledge

generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5

USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the modification of the teaching of the appellant's background to include the teaching of Tosey would be obvious because one of ordinary skill in the art would want to enable the server to recover when other connecting network component fails as taught by Tosey (col. 4, ll 61-67). Moreover, the appellant fails to point out an error in the motivation.

iv)   Appellant's argument: Tosey teaching produces a differing result than the system of claim 1 as Tosey requires an active peer for the testing to work or else it would continually fail over in a case when the testing device is the first active peer. In contrast, in the system of claim 1, connectivity between the primary NIC and switch can be checked without any peer devices for the server and/or hosts of claim 1.

Examiner's response: It is clear from the claim language of claim 1 that two devices are involved during the testing, i.e. the primary I/O board of the server and the primary switch. Similarly, Tosey also requires two devices, i.e. the network computing device 21 in Fig. 2 and "another" peer device (col. 3, ll 35-37 and col. 7, ll 34-36), which prevents the situation of a continuous fail over when the testing device is the first active device as argued by the appellant. And because Tosey teaches testing the connectivity from the network computing device, to the hub, and to another peer device (Fig. 2), therefore, regardless of the test result, the connectivity between the network computing device and the hub must be tested which produces the same result as the system of claim 1, i.e. testing connectivity from the primary I/O board of the server (reads on Tosey's the network computing device) to the primary switch (reads on Tosey's hub).

     B.   *Appellant's arguments and Examiner's responses regarding dependent claims 2-5 and 9-12 are as follows:*

     i).   Appellant's argument: Claims 2-5 and 9-12 depend from claims 1 and 8, respectively, and are believed allowable as depending from allowable base claims.

          Examiner's response: As explained in section (9) and section A of section (10) above, claims 2-5 and 9-12 remain rejected for the same reason set forth in the rejection of claims 1 and 8, respectively.

     C.   *Appellant's arguments and Examiner's responses regarding dependent claims 6 and 13 (mistakenly indicated as 10 on page 9 of the appellant's brief) are as follows:*

     i)   Appellant's argument: Tosey does not teach transferring network information including IP addresses "of other devices connected to the network, netmask, or broadcasts" from a primary to a secondary NIC as recited in claim 15.

          Examiner's response: It is to be noted that claims 6 and 13 recites "the network information includes one of an Internet Protocol (IP) address, a netmask, a broadcast, and a logical IP address," which is different from that of claim 15. Tosey clearly teaches the limitation of claims 6 and 13 by teaching that the program (the administrative software, col. 4, ll 52-55) comprises transferring network information including a logical IP address (a mobile IP address) from the primary NIC (NIC 25, Figs. 5A and 5B) to the secondary NIC (NIC 26, Figs. 5A and 5B) (col. 8, ll 7-39).

     D.   *Appellant's arguments and Examiner's responses regarding independent claim 15*

are as follows:

     i)   Appellant's argument: Tosey does not teach transferring network information

including IP addresses "of other devices connected to the network, netmask, or broadcasts" from

a primary to a secondary NIC as recited in the claim.

          Examiner's response: Tosey teaches that after the first interface fails, the second

interface broadcasts the new IP address (col. 8, ll 36-38 and 44-47). Hence, the second interface

transfers broadcasts from the primary interface to the secondary interface as recited in the claim.

     E.   *Appellant's arguments and Examiner's responses regarding claims 7 and 14 are*

as follows:

     i)   Appellant's argument: Claims 7 and 14 depend from claims 1 and 8, respectively,

and are believed allowable as depending from allowable base claims.

          Examiner's response: As explained in As explained in section (9) and section A

of section (10) above, claims 7 and 14 remain rejected for the same reason set forth in the

rejection of claims 1 and 8, respectively. In addition, the appellant fails to point out an error in

the motivation.

     F.   In conclusion, the appellant's invention is about implementing network

redundancy in a system where a connectivity signal is used to test the connectivity from a

sending device to a primary switch, and a recovery process is performed by enabling a secondary

NIC to assume a function of a primary NIC when the response signal to the connectivity signal is

not received within a predetermined time period. The appellant's background only teaches

testing the connectivity from a sending device up to the primary NIC, not to the primary switch.

Tosey overcomes this deficiency by teaching testing the connectivity on a path from a sending

device to a hub (primary switch) and to another device and recovery method.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related

Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Nittaya Juntima/
Examiner, Art Unit 2416
4/27/2009

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